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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,141	02/15/2002	Wayne E. Conrad	88630.213CIP	9852

7590 09/06/2005

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EXAMINER	
CHORBAJI, MONZER R	
ART UNIT	PAPER NUMBER
1744	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/076,141	CONRAD ET AL.	
	Examiner	Art Unit	
	MONZER R. CHORBAJI	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This non-final action is in response to the amendment received on 06/28/2005

Remarks

1. The Terminal Disclaimer received on 06/28/2005 has been accepted and the double patenting rejections applied in the action dated 02/28/2005 have been withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-2, 4-6, 12 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Hadamovsky et al (U.S.P.N. 4,118,313).

With respect to claim 1, the Turk reference discloses a fluid contact chamber including the following: a container (10) for a first fluid (14) having first and second sides, inlet for a second fluid (11), a means for directing the flow of the first fluid (12) such that at least one eddy is formed (ozone gas is sparged into the second fluid which is flowing countercurrent to water that intrinsically results in the formation of eddies, col.3, lines 51-59, the ozone bubbles flow along the lower surface of baffle, 12), the means for directing includes first baffle extending from the first side toward the second side (12), forming a first gap between the first baffle and the second side and an outlet for passage of the first and second fluid (water containing ozone is discharged through outlet, 21 as mentioned in col.4, lines 3-5). However, the Turk reference fails to teach a first baffle inclining upwardly at a first angle between 10 and 45 degrees. The Hadamovsky reference, which is in the art of fluid contact, teaches a first baffle (for example, figure 3:7) inclining upwardly at a first angle between 10 and 45 degrees (examples 1-2 and 4-5). As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the baffles of the Turk

reference by inclining them at 30 degrees as taught by the Hadamovsky reference in order to keep the height of the contact chamber small (col.13, lines 44-47).

With respect to claim 2, the Turk reference teaches a second baffle (figure 1, unlabeled second baffle from the top in chamber 10) extending from second side (figure 1, unlabeled right side of chamber 10) toward the first side (figure 1, unlabeled left side of chamber 10) forming a second gap (figure 1, unlabeled gap between the end of unlabeled second baffle and first side) between the second baffle and first side, but fails to teach to teach an upwardly inclining second baffle at a second angle. The Hadamovsky reference, which is in the art of fluid contact, teaches multiple baffles (for example, figure 3:7) inclining upwardly with angle values that range between 10 and 45 degrees (examples 1-2 and 4-5). As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the baffles of the Turk reference by inclining them at 30 degrees as taught by the Hadamovsky reference in order to keep the height of the contact chamber small (col.13, lines 44-47).

With respect to claim 5, the Turk reference fails to teach modifying the surface of the first baffle to promote precipitation; however, the Hadamovsky reference (figure 4a, 4) shows accumulation of solid on the surfaces of the baffles such that the surface is modified by tilting the surface of the baffle at a certain angle. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the surface of the baffles of the Turk reference by tilting them at certain angle as taught by the Hadamovsky reference in order to keep the height of the contact chamber small (col.13, lines 44-47).

With respect to claim 21, the Turk reference fails to teach tilting the baffles in the contact chamber that would result in a truncated triangular cross-section; however, the Hadamovsky reference teaches an upwardly inclined baffles (figure 3:7) such that tilting the baffles of the Turk reference upwardly as taught by the Hadamovsky reference will intrinsically result in forming a third gap that defines a truncated triangular cross-section. As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the baffles of the Turk reference by inclining them at 30 degrees as taught by the Hadamovsky reference in order to keep the height of the contact chamber small (col.13, lines 44-47).

With respect to claims 17-20, Turk reference fails to teach tilting the baffles; however the Hadamovsky reference teaches that the inclination angel for the baffles in examples 1-2 and 4-5 can be 40, or 30 or 50 degrees. However, Since the Hadamovsky reference teaches that the degree of inclination of the baffles depends on the height of the chamber; modification of the inclination angel of the baffles is a matter of routine experimentation.

With respect to claims 4, 6, 12 and 15-16, the Turk reference teaches the following: a catalyst is disposed in the container (col.3, lines 51-53), means for chemical modification (the use of catalyst), first baffle extends at least 80% of the width of the chamber (figure 1, 12), first fluid is introduced in a counter flow to the second fluid (10, 14 and 11) and the directing means defines a serpentine flow path through the chamber (ozone bubbles flows in a serpentine flow path around baffles 12 in 10).

6. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Hadamovsky et al (U.S.P.N. 4,118,313) as applied to claim 6 and further in view of Lund et al (U.S.P.N. 4,028,246).

With respect to claims 7-8, both the Turk reference and the Hadamovsky reference fail to teach the use of ultrasonic and ultraviolet emitters; however, the Lund reference, which is in the art of liquid purification, teaches the use of ultrasonic and ultraviolet emitters (34 and 33). As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by adding ultrasonic and ultraviolet emitters as taught by the Lund reference since the combination of such emitters result in a synergistic effect for better fluid treatment (col.2, lines 5-7).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Hadamovsky et al (U.S.P.N. 4,118,313) and Lund et al (U.S.P.N. 4,028,246) as applied to claim 8 and further in view of Olsen (U.S.P.N. 5,683,576).

With respect to claim 9, the Turk reference, the Hadamovsky reference and the Lund reference all fail to teach where ultrasonic emitter is placed at an angle relative to the first and second baffles such that ultrasonic signal is directed through the eddy; however, the Hadamovsky reference, which is in the art of fluid contact, teaches placing a first baffle (for example, figure 3, 7) inclining upwardly at a first angle between 10 and 45 degrees (examples 1-2 and 4-5) and placing a second baffle upwardly inclining at a second angle (figure 3, unlabeled second baffle). With respect to claim 9, the Olsen reference, which is in the art of treating water, teaches placing ultrasonic emitter within

the water treatment chamber (figure 2, 40). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Turk reference by placing ultrasonic emitter within the chamber as taught by the Olsen reference since the sonic waves disburse fine bubbles into microbubbles causing a greater mass transfer that result in increasing efficiency of water treatment (col.3, lines 54-60).

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Hadamovsky et al (U.S.P.N. 4,118,313) as applied to claim 1 and further in view of Burgher (U.S.P.N. 5,091,118).

With respect to claim 3, both the Turk reference and the Hadamovsky reference fail to teach the use of a venturi tube; however, the Burgher reference, which is in the art of sparging gases into liquids, teaches the use of venturi (30). As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by adding venturi means as taught by the Burgher reference in order to maximize the concentration of the gas in the liquid (col.1, lines 61-64).

9. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) view of Hadamovsky et al (U.S.P.N. 4,118,313) and Burgher (U.S.P.N. 5,091,118) as applied to claim 3 and further in view of Lund et al (U.S.P.N. 4,028,246).

With respect to claims 13-14, the Turk reference, the Hadamovsky reference and the Burgher reference all fail to teach a removable insert from the chamber; however, the Lund reference, which is in the art of liquid purification, teaches the use of a

removable baffles (20). (See col.4, lines 14-20) with the inserts being 24 for supporting removable baffles 20. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the stationary baffles of the Turk reference by substituting them with removable ones since such a substitution is a matter of choice of design as evidenced by the Lund reference.

10. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turk (U.S.P.N. 4,029,578) in view of Hadamovsky et al (U.S.P.N. 4,118,313) as applied to claim 1 and further in view of Schenck (U.S.P.N. 5,753,106).

With respect to claim 10, both the Turk reference and the Hadamovsky reference fail to teach the use of titanium dioxide; however, the Schenck reference, which is in the art of water treatment, teaches the use of titanium dioxide (col.17, line 42). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of the Turk reference by including titanium dioxide as taught by the Schenck reference in order to improve the photopurification process by counterbalancing the effects of the contaminants absorption that result in restricting photochemical reactions (col.17, lines 39-49).

With respect to claim 11, the Turk reference teaches that the inlet at a lower portion of the container (14).

Response to Arguments

11. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

structure shown in the Turk patent at all because it already has attained the smallest structural height." The examiner disagrees since nowhere does the Turk reference teach that the angle of inclination of the baffles can equal to zero. On the contrary, throughout the Turk reference including examples 1-5, the angle of inclination of the baffles is 40 or 30 or 50 degrees with respect to the horizontal. Thus, "small" inclination angle of the baffles is not equal to zero as applicant indicated in order to keep the size of the contact chamber small.

On page 8 of the Remarks section, applicant argues that, "Second, the Hadamovsky patent relates to scrubbing procedures that separate solids from a scrubbing liquid." The examiner disagrees, since both the instant claims and the Hadamovsky reference are in the art of fluids contacting each other in a chamber. See col.7, lines 26-37 of the Hadamovsky reference.

On page 8 of the Remarks section, applicant argues that, "If the baffles of the Hadamovsky patent were to replace the baffles of the Turk patent, they would also include two passageways. The Turk patent does not teach or suggest that baffles with two passageways would be beneficial." In the action dated 02/28/2005, pages 5-6, the examiner considers the baffles of the Hadamovsky reference to represent baffle labeled 7 in figure 3 and not the baffles shown in figures 1-2. For example, baffle 7 in figure 3 does not require two passageways as indicated by the applicant.

On page 8 of the Remarks section applicant argues that, "Should the examiner persist in urging such a modification, the examiner is respectfully requested to provide a proper basis for the requisite motivation to modify the Turk patent in view of the

Hadamovsky patent to include baffles with an inclination angle while having only one passageway (not two passageways)." As indicated above, the examiner considers the baffles of the Hadamovsky reference to represent baffle labeled 7 in figure 3 and not the baffles shown in figures 1-2 such that baffle 7 in figure 3 does not require two passageways as indicated by the applicant. As result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the baffles of the Turk reference by inclining them at 30 degrees as taught by the Hadamovsky reference in order to keep the height of the contact chamber small (col.13, lines 44-47).

This action is made non-final in response to instant claim 9. Specifically, with regard to addressing the limitations of claim 9 as indicated by the applicant. The newly applied reference, Olsen (U.S.P.N. 5,683,576), teaches that it is known to place ultrasonic emitters within fluid contact chambers.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN KIM can be reached on (571) 272-1142. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monzer R. Chorbaji MRC
Patent Examiner
AU 1744
08/25/2005

JOHN KIM
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